

A - Starting Lights

Learn how to use the Sparkle module by creating some starting lights for a race around the planet.

3,2,1...

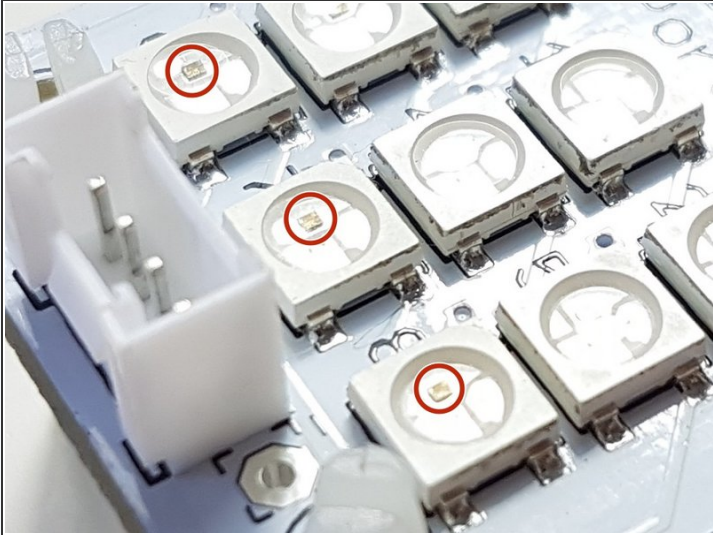
GO!

INTRODUCTION

Learn how to use the Sparkle module by creating some starting lights for a race around the planet.

Step 1

What are Sparkles?

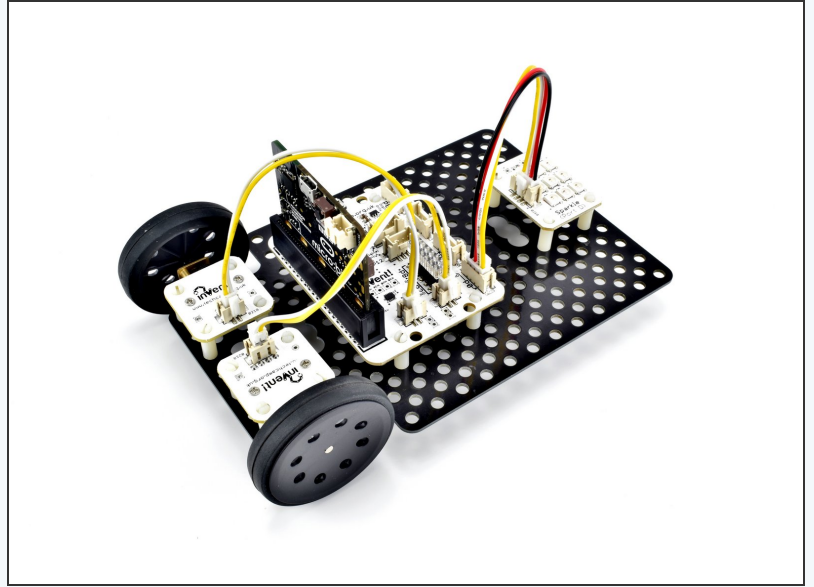


- Sparkles are very useful - they are **LEDs**, just like the red/green LED from before, but much cleverer!
- They have small chips inside them, which allow you to control many LEDs using **just one output**. If you look really closely you might be able to see them.
- They are also **three LEDs in one** - there is a **red**, **green** and **blue** LED in every sparkle.
- We can control these three internal LEDs **separately**, and mix them together to create **any colour**!

Step 2

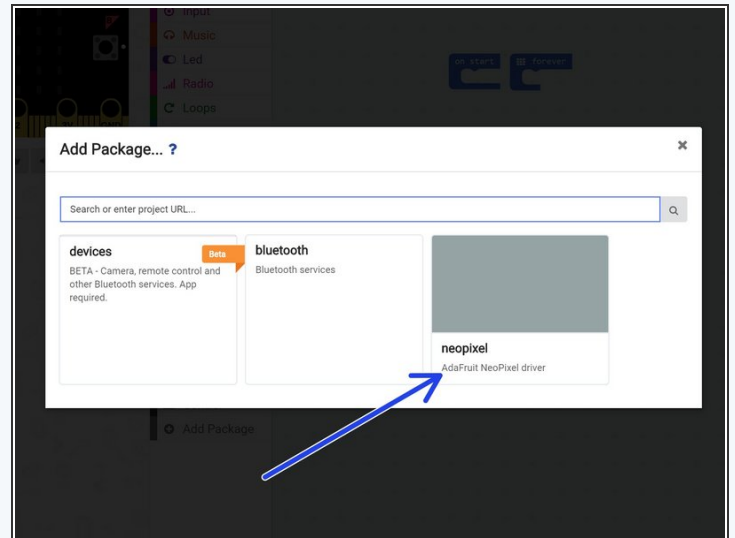
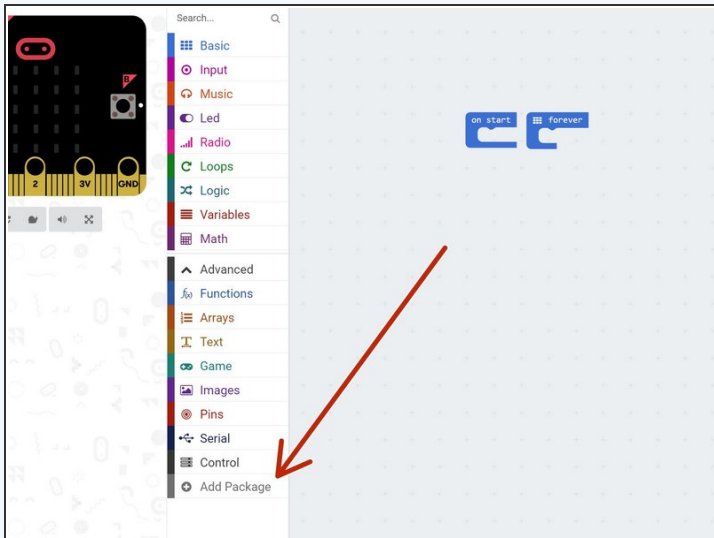
Connect your Sparkle Module

- Build up your robot like the picture.
- Plug the sparkle module into **P0**.

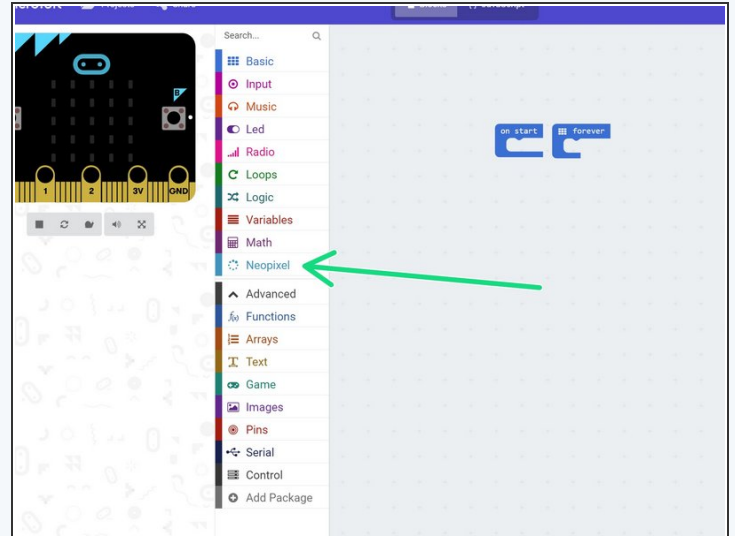


Step 3

Add the Neopixel Package

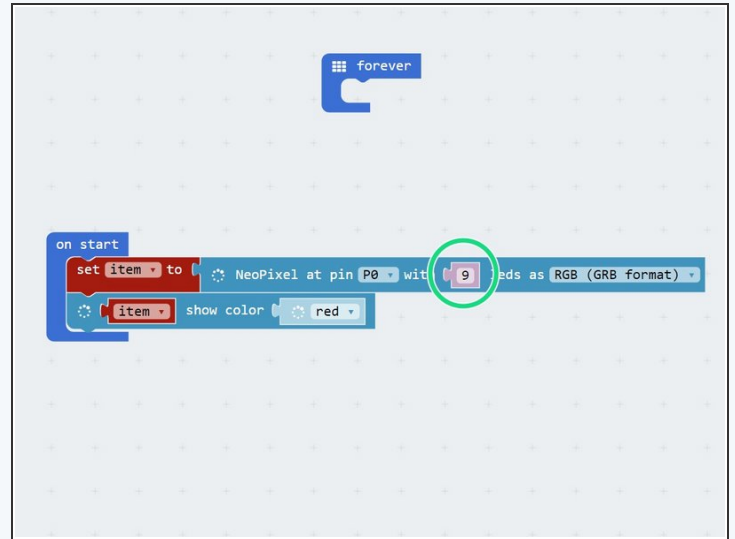
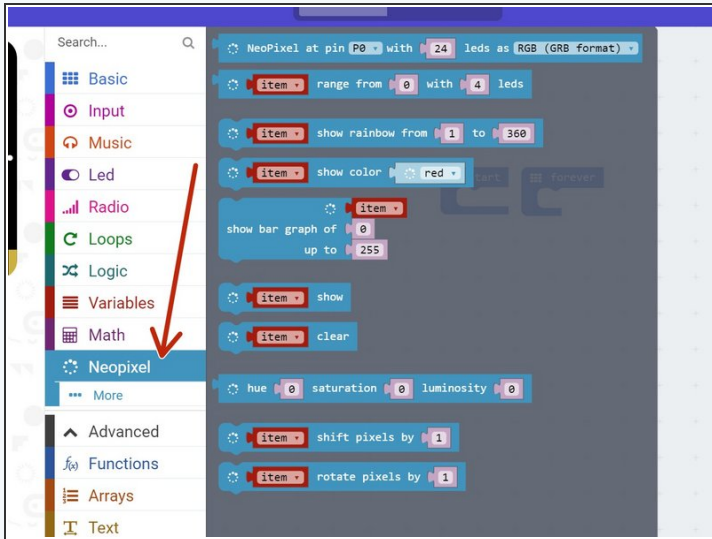


- To use Sparkles with the micro:bit, we need to add another package called **Neopixels** (this is just another name for Sparkles).
- Click the **Add Package** button at the bottom of the advanced menu.
- In the box that appears, click on **neopixel**.
- You should now have a **Neopixel** light blue menu in your editor!



Step 4

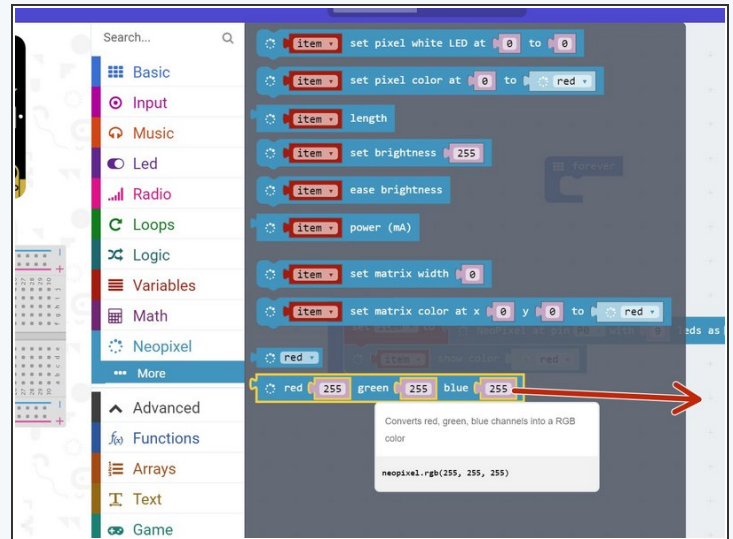
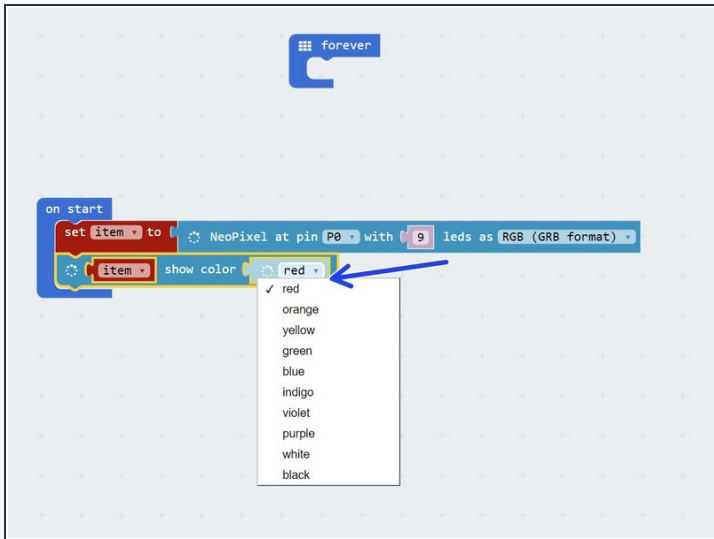
Test Your Sparkles



- All the blocks we need for sparkles are in the new **neopixels menu**. Click on it and have a look at all the **new blocks** you can use.
- For now, let's **test the sparkles** by building the simple program in the picture - hopefully they **all turn red** when you **program your robot**!
- Don't forget to change the number of LEDs to **9**.
- ⚠ Don't stare at the sparkle board for too long - it's very bright!

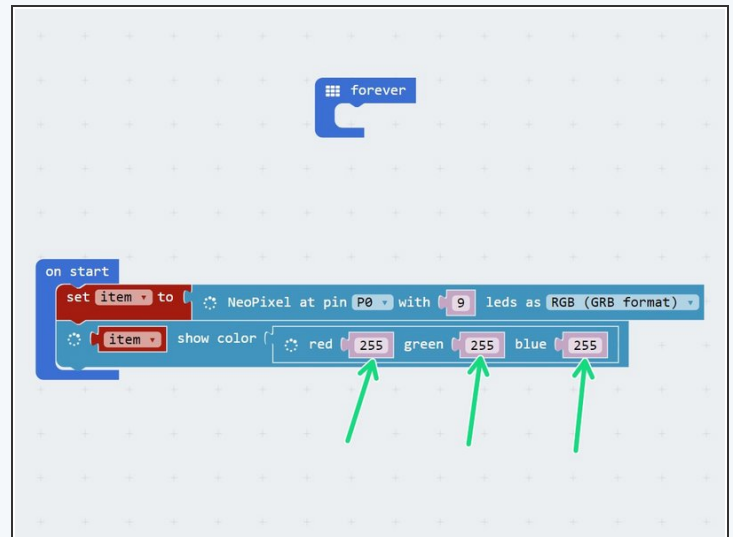
Step 5

Different Colours



- It's really easy to control the red, green and blue LEDs **separately** to make **any colour we like**.
- **Click** on the colour name to bring up the colours list - **try a few different ones** and see how they look!
- To get colours not on the list, we can put in the values for red, green and blue **directly**.
- From the **more** menu, drag in a red, green, blue block.
- Drag this into the **show colour** block like the picture and try changing the 3 numbers, to see what colours you can make.

⚠ The sparkles use quite a lot of power on full brightness - switch off your board when you aren't using it to save battery life.



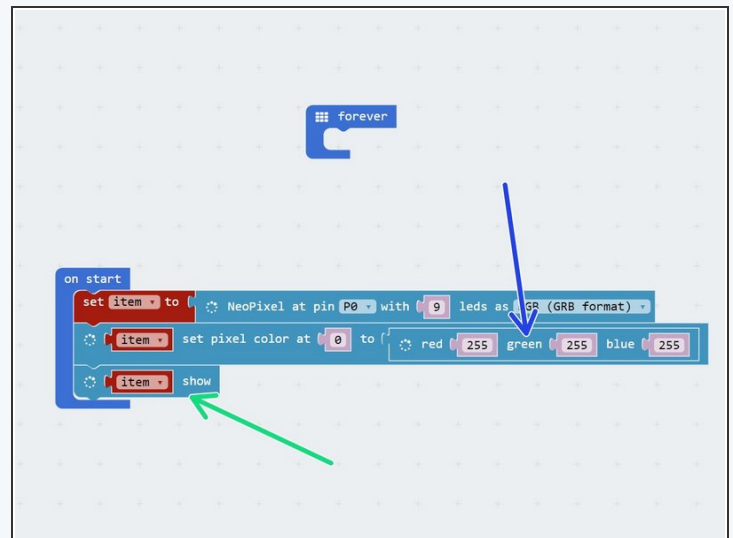
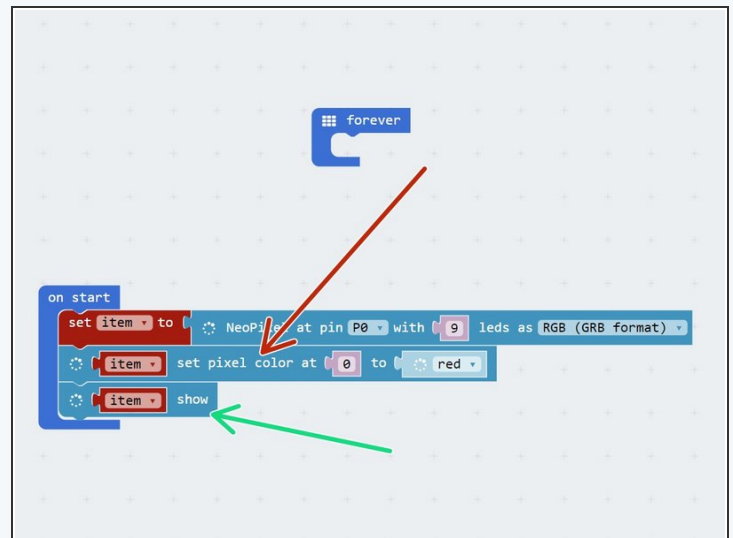
Step 6

Different Sparkles, Different Colours

Challenge!



- Remember, we can also control each sparkle **individually!**
- Use a **set pixel colour** block from the **more menu** to do this.
- You can also use the set pixel block with **red, green and blue** values, like before, to get any colour you like!
- Whenever you set pixel colour individually, you also need to **update** the strip as it isn't done automatically - use a **show** block to do this, like in the picture. If you don't use this block, the sparkle won't change!
- **In programming numbers start from 0**, not 1 - so for three sparkles, the first is 0, the second is 1 and the third is sparkle 2.
- Use **three** of the individual set pixel colour blocks to **set the first three sparkles to different colours.**



Step 7

Extension Challenge - Starting Lights

- Let's make a set of **starting lights** for a race across the planet surface.
- Check out the F1 starting lights in the video - can you put together a program using **sparkle** and **wait** blocks to **make your own**?
- The lights should **turn red 3 at a time**, then **all go green** at the same time.

